Air Force Theater Battle Arena

Overview

What does the TBA Do?

- Provides the tools and an environment for analyses and study support
- Participates in Air Force and multi-service distributed interactive exercises and war games
- Reconstructs real-world events for analyses and review
- Illuminates complex concepts
- Demonstrates and investigates existing and emerging technologies

Theater Battle Arena
Advanced Distributed Simulation

TBA Systems

- Virtual (Human-in-the-Loop) Simulation Nodes
  - **F-15C WTT (air-to-air), F-15E (air-to-ground), JSTARS, Enhanced Sensor Cobra Ball, UAV, Airborne Laser**
- Constructive Simulations
  - **STAGE, EADSIM, AWSIM, SWEG**
- Emerging Systems
  - **Link-16 Gateway, Airborne Laser, F-15C JTIDS, Cooperative Engagement Capability, CVW**

Typical Virtual Simulation

Advanced Sensor Operator Station, Enhanced Cobra Ball Simulation Node

TBA Systems (Cont.)

- Fielded Air Force Systems
  - **GCCS, TIBS, AFMSS, CIS, PowerScene**
- Visualization Systems
  - **PowerScene (F-15E out-the-window), Edge 3D, SpaceVis, MäK Stealth**
- Tools
  - **MultiGen, Performer, DIS Test Suite, DIS Manager, GPS computer clock synchronization system, various system recorders, PV-Wave, Satellite Tool Kit**

Key TBA Studies Accomplished

- Joint Engagement Technology Study (JETS), Cooperative Engagement Capability (CEC) on AWACS (97)
- Global Positioning System Munitions Study (97)
- Cobra Ball study to determine field-of-view impact on detectability (96)
- Feasibility of EPLRS transmitted targeting information to F-15E HUD for air-ground attack operations (96)

TBA Studies Accomplished (Cont.)

- Number of Predator UAVs required to support a JSTARS Ground Radar Coverage Area (GRCA) in Bosnia (96)
- Terrain masking analysis for JSTARS deployment to Bosnia (95, 96)
- Development of F-15C HUD engagement cues for Boost Phase intercept of Theater Ballistic Missiles (94, 95)
- Analysis of accidental Black Hawk shoot down (94)

Exercises and War Games

- **Weather War Game (98)**
- **Roadrunner DMT view port (98)**
- **EFX view port via CVW and modeling and simulation (98)**
- **BMDO CINC Assessment Program**
  - **Joint Project Optic Cobra/Roving Sands (95, 96, 97)**
  - **Joint Project Optic Diamond/Roving Sands (98)**
- **Warrior Flag (97)**
- **War Fighter (95, 97)**
- **Ulchi Focus Lens view port (96, 97)**

Exercises and Wargames (Cont.)

- **Fort Franklin view port (96)**
- **Joint Precision Strike Demo (Air-ground 95, EPLRS 96)**
- **BMDO exercises (95, 96)**
- **Roving Sands view port (95)**
  - **Goldpan U-2 feed**
  - **Live Predator electro-optical feed**
- **LIVEX (95)**
- **HERA live missile shot (95)**
- **Synthetic Theater of War - Europe (94)**

Illumination of Complex Concepts

- Boost Phase Intercept
- Scud TEL hunting
- Multi-system integration
- Mission rehearsal
- Cobra Ball C2
- Predator C2
- CIS/AFMSS/PowerScene integration

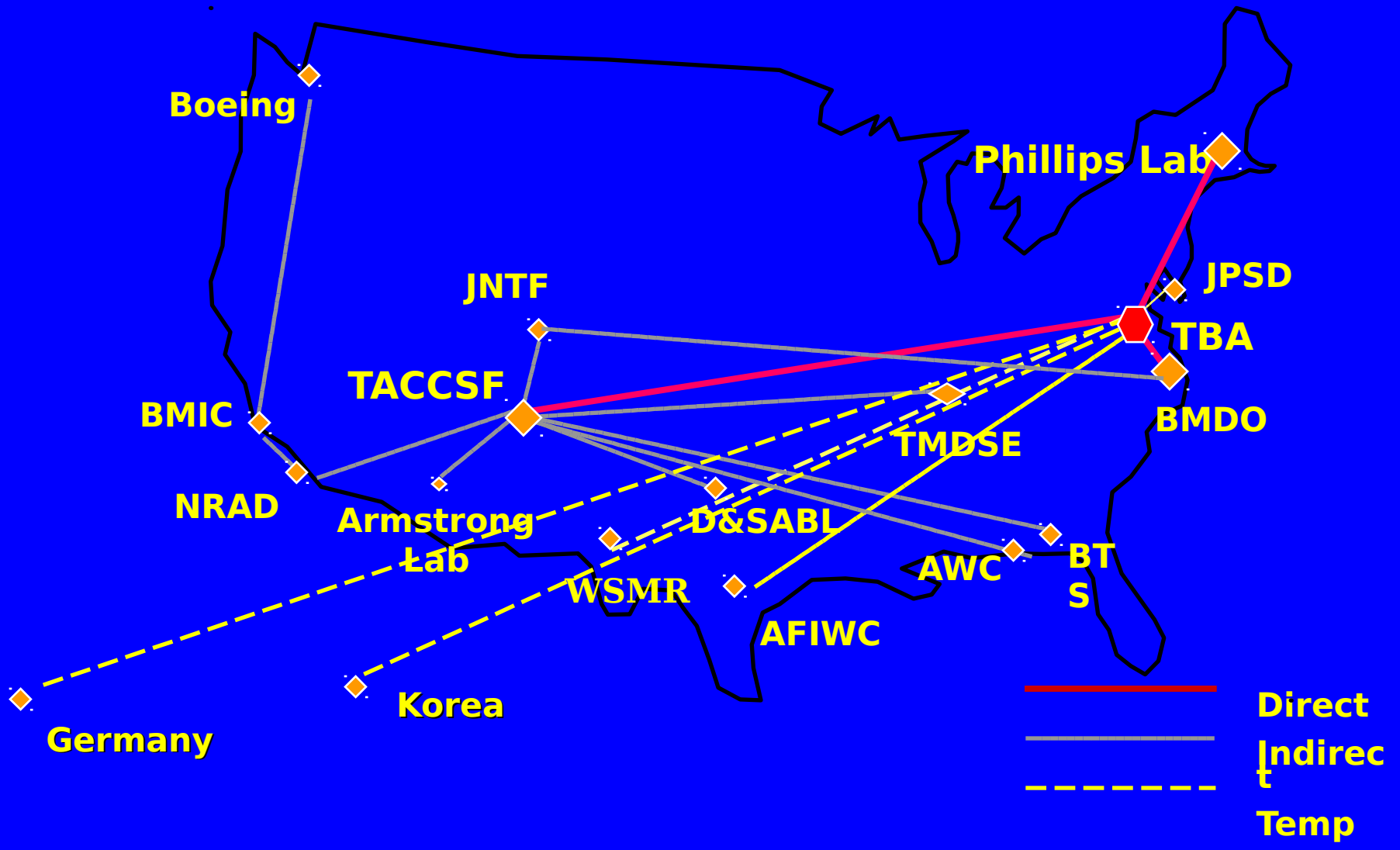
Existing and Emerging Technologies

- TBMCS CVW (EFX 98)
- Joint Engagement Technology Study (JETS) for CEC on AWACS (97)
- Predator C2 (95, 96)
- F-15E/EPLRS - Joint Precision Strike (96)
- Cobra Ball CONOPS (95, 96)
- Boost Phase Intercept CONOPS (94)
- BMDO/Technical Engineering Demo (94)

Event Reconstruction

- Theater Airborne Warning System missile tracks and sensor fusion (98 - ongoing)
- Iraqi no-fly zone violations (98)
- F-16 dead stick landing for Kollegan Award and media (97)
- Battle of Khafji (96)
- Secretary Brown crash (96)
- Khobar Towers explosion (96)
- Black Hawk accidental shoot down (94)

Theater Battle Arena
Connectivity



Major TBA Computer Resources

- Silicon Graphics
  - **4 Onyx 2s with infinite reality engines, 6 GB Ram, and a total of 28 processors**
  - **2 desk side Onyx 2s with 4 processors each**
  - **2 Octanes with 2 processors each**
  - **10 O-2s with 1 processor each**
  - **448 GB disk storage**
- Sun
  - **4 Sparc 20s**
  - **1 Sparc Ultra**

Benefits of the TBA

- Saves resources
- Provides a forum and environment for studies and analyses
- Provides Air Force assets to external exercises, war games, and studies
- Illuminates complex concepts for AF leadership
- Accessible to Air Force decision makers

Selected Acronyms

- **AFMSS - Air Force Mission Support System**
- **AWSIM - Air Warfare Simulation**
- **CIS - Combat Intelligence System**
- **EADSIM - Extended Air Defense Simulation**
- **EFX - Expeditionary Force Experiment**
- **GCCS - Global Command and Control system**
- **JSTARS - Joint Surveillance Target Attack Radar System**
- **JTIDS - Joint Tactical Information distribution System**
- **STAGE - Scenario Toolkit and Generation Environment**
- **SWEG - Simulated Warfare Environment Generation**
- **TBA - Theater Battle Arena**
- **TIBS - Tactical Information Broadcast System**
- **UAV - Unmanned Aerial Vehicle**